

Application Serial No.: 09/862,418
Applicant(s): Chang et al.

Docket No.: N.C. 79,764

REMARKS

Reconsideration of the above-identified application is respectfully requested. Claims 1-17 and 19-20 remain in this application. Claims 21-31 were previously withdrawn as being drawn to a non-elected invention. Claims 1-17 and 19-20 have been amended to more particularly point out and distinctly claim the subject matter that Applicants regard as their invention.

I. Claim 1 was objected to because of an informality. Applicants submit that Claim 1, as amended, overcomes this objection.

II. Claim Rejections – 35 U.S.C. § 112, second paragraph

Claims 1-17 and 19-20 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 1-17 and 19-20 have been amended to more particularly point out and distinctly claim the subject matter that Applicants regard as their invention.

The Examiner stated that in claim 1, the “wherein” clause was written in primarily functional language. Applicants have amended claim 1 to eliminate the functional language. The Examiner also suggested the applicants replace the term “chelators” with “chelated metal ions” and stated that “chelators” lacked proper antecedent basis. Applicants have amended claim 1 to indicate that the “active complex” is comprised of a “chelator” and a “metal ion” and that the “active complex” is immobilized on the support. Applicants believe that this amendment to claim 1 places it in condition for allowance.

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The Examiner stated that in claim 7, the phrase "catalytically active chelated metal ion" lacked strict antecedent basis. Applicants have amended Claim 7 to recite "metal ion". Since claim 7 depends from claim 1, "metal ion" has proper antecedent basis in Claim 1. Applicants believe the amendment to Claim 7 places it in condition for allowance.

The Examiner has rejected claim 9 for lacking antecedent basis for the term "support". Applicants have amended claim 9 to remove the term. Applicants believe this amendment places claim 9 in condition for allowance.

Applicants have amended Claims 10 and 11 to provide proper antecedent basis in light of the amendments to Claim 1.

The Examiner has stated that claim 12 improperly uses the term "chelate" and recommends the use of "chelating ligand". Applicants have amended claim 12 to overcome the Examiner's rejection and better align the language of claim 12 with that of claim 1. Applicants have also amended claim 12 to correct a minor typographical error. Applicants believe the amendment to claim 12 places it in condition for allowance.

Claim 13 has been amended to provide proper antecedent basis from claim 12.

The Examiner has stated that the language of claim 14 "is functional", and it was not clear that the support alone adsorbs the materials as opposed to the support plus ligand plus metal ion. Claim 14 has been amended to remove the functional language. Applicants believe this amendment places claim 14 in condition for allowance.

The Examiner has stated that in claim 15, in step (b), "covalently bound chelate groups" strictly lacks antecedent basis. Applicants have amended claim 15 to provide proper antecedent basis and to correct a minor typographical error.

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Claim 16 has been amended provide proper antecedent basis from claim 15.

The Examiner states that the language of claim 17 is functional, and it is not clear if "one or more" means one or more of the individual groups or more than one of the individual groups. Applicants have amended claim 17 to remove functional language and removed "one or more". Applicants believe this places claim 17 in condition for allowance.

Based on the above, Applicants respectfully submit, that the §112 rejections have been overcome and the claims are in condition for allowance.

III. Claim Rejections – 35 U.S.C. § 103(a) – Gustafson, Courtney, Wagner-Jauregg & Gryaznov

Claims 1-4 and 7-11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over any of Gustafson et al., J. Am. Chem. Soc., vol. 85, pp. 598-601 (1963) (Gustafson); Courtney et al., J. Am. Chem. Soc., vol. 79, pp. 3030-3036 (1957) (Courtney); or Wagner-Jauregg et al., J. Am. Chem. Soc., vol. 77, pp. 922-929 (1955) (Wagner-Jauregg), in view of U.S. Patent 4,394,294 to Gryaznov (Gryaznov).

Applicants respectfully submit that claims 1-4 and 7-11 are not obvious over Gustafson, Courtney, or Wagner-Jauregg in view of Gryaznov. The Examiner states that each of the primary references discloses the invention substantially as claimed in their abstracts and "introduction section. The Examiner additionally states that none of those references discloses the use of a polymeric support for holding a nitrogenous base ligand. The examiner states that Gryaznov teaches that "in the field of catalysis it is conventional to support the active metal on a solid polymeric support having nitrogenous basic ligands covalently bound to the support through another chemical entity (col. 2, lines 22-39). Applicants respectfully traverse.

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Gryaznov discloses a membrane catalyst (col. 2, lines 22-39) that is vulcanized to form a film of heterogenized palladium complex bonded to a silica surface (cols. 3-4, lines 67-13). The attachment of the active metal on a solid polymeric support is not accomplished through direct chemical bonding, as claimed in Claim 1 of the present application, as amended. Using the vulcanization technique does not result in the present invention. Gryaznov teaches a product that is a catalyst for hydrogenation (col. 4, line 12-13), not a catalyst for hydrolysis as claimed in Claim 1. Therefore, there would be no motivation for one skilled in the art to combine the hydrogenation catalyst of Gryaznov with the primary references to arrive at the hydrolysis catalyst of the present invention. Therefore, Applicants respectfully submit that claims 1-4 and 7-11 are not obvious over the combination of references.

IV. Claim Rejections – 35 U.S.C. § 103(a) – Gustafson, Courtney, Wagner-Jauregg, Gryaznov & Singh

Claims 1-4, and 7-11, 15-16 and 19-20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over any of Courtney, Gustafson, Wagner-Jauregg, and Gryaznov as applied to claims 1-4 and 7-11 above, and further in view of Singh et al., Mat. Res. Soc. Symp. Proc., vol. 501, pp. 199-207 (1998) (Singh).

The Examiner relies on Singh for the teaching that preorganized polymer matrices that bind metal ions selectively are conventional in the art. The preorganized polymer matrices of the Singh reference is not equivalent to the self-organized polymolecular associations of the present invention. Attached is the declaration of Eddy Chang, a co-author of the Singh reference and co-inventor of the present invention supplied to support the distinction between preorganized and self-organized polymolecular association. It would not have been obvious to one skilled in the

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art to use the teachings of Singh to arrive at the self-organized polymolecular associations of the present invention. For this reason, in addition to the reasons given above regarding the rejection of claims 1-4 and 7-11, applicants respectfully submit that claims 1-4, 7-11, 15-16 and 19-20 are not obvious over the combined references.

V. Claim Rejections – 35 U.S.C. § 103(a) – Gustafson, Courtney, Wagner-Jauregg, Gryaznov, Singh & Giletto

Claims 1-11 and 15-18 and 20 were rejected under 35 U.S.C. §103(a) as being unpatentable over Singh, Courtney, Wagner-Jauregg, and Gryaznov as applied to claims 1-4, 7-11, 15, 16, 18 and 20 above, and further in view of U.S. Patent 6,569,353 to Giletto (Giletto). Applicants assume that the Examiner intended to list Claims 15-17, rather than 15-18, since Claim 18 was previously cancelled.

The Examiner states that none of the primary references “discloses that the support may be a sorbent for the substrate molecules to by hydrolyzed (abstract). However, Giletto teaches that compositions used to detoxify chemical warfare agents may include a sorbent material for the agent.” Applicants respectfully submit that claims 1-11 and 15-18 and 20 are not obvious over the combined references. Giletto discloses and teaches an oxidant in the sorbent as the active agent. The sorbent does not enhance hydrolysis as the support of the present invention. The present invention teaches the support that enhances hydrolysis (page 23, table 2, lines 21-26). The sorbent of Giletto is not used for hydrolysis, and the adsorbent used is “inert and non-reactive with the oxidizing agents” (Giletto, col. 7, lines 8-24). Thus, Giletto does not disclose a support as recited in amended claim 17. One skilled in the art would not combine the sorbent of Giletto with the teachings of the other references cited to arrive at the present invention. For this

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reason, in addition to the reasons given above regarding the rejection of claims 1-4, 7-11, 15-16, and 18-20, applicants respectfully submit that claims 1-11, 15-17, and 19-20 are not obvious over the combined references.

VI. Claim Rejections – 35 U.S.C. § 103(a) – Gustafson, Courtney, Wagner-Jauregg, Gryaznov, Hlatky & Soga

Claims 1-4 and 7-14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Gustafson, Courtney, Wagner-Jauregg, and Gryaznov as applied to claims 1-4 and 7-11 above, and further in view of either U.S. Patent 6,040,261 to Hlatky (Hlatky), or U.S. Patent 5,610,115 to Soga (Soga).

The Examiner states that none of the primary references “discloses that the polymeric composition may be made by first making the substrate, adding the ligand which bonds the metal, then adding the metal compound whose metal atom then binds to the support-bonded ligand. However both Hlatky and Soga teach that such a reaction scheme is conventional in the preparation of supported catalysts.” Applicants respectfully traverse. Applicants do not claim this reaction scheme identified by the Examiner. The Examiner suggests that one skilled in the art could use the sequence of either Soga or Hlatky “to make another catalytic material such as the presently-claimed one, as well as to change the order of steps so that the metalated ligand monomers are first formed, followed by polymerization”. However, one skilled in the art would not be motivated to combine the teachings of either Soga or Hlatky with the other references cited as changing the order of the reaction can inactivate the active complex. Attached is the declaration of Eddie Chang in support of this argument. This, in addition to the reasons given

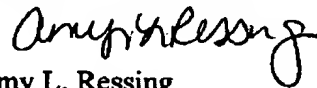
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above regarding the rejection of claims 1-4 and 7-14, applicants respectfully submit that claims 1-4 and 7-11 are not obvious over the combined references.

In view of the foregoing, it is respectfully submitted that all of the Examiner's objections and rejections have been overcome. Applicants respectfully request reconsideration and a timely Notice of Allowance be issued in this case. Kindly charge any additional fees due, or credit overpayment of fees, to Deposit Account No. 50-0281.

Respectfully submitted,



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